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a Learning Design Approach

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Developing Learning Scenarios for Educational Web Radio: a Learning Design Approach

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Abstract. Radio has been used in education since the beginning of last century. With the rise of the internet, web radio came into life and provided new possibilities for web radio content (e.g. video apart from voice and music), asynchronous broadcasting, and cooperation between students from different schools. In this paper, we present a survey study that aimed to evaluate a Visual Learning Design (VLD) approach for developing educational scenarios in web radio. The study results indicated that the VLD approach helped teachers to think about the educational aspects of the web radio production and helped in communicating their ideas. Moreover, the teachers highlighted the possibilities and the impact such web radio implementations could have for student learning and collaboration. The only aspect that received some criticism was the provision of technology, and this was partially due to the lack of previous experience in web radio production. These results will guide the application of the VLD approach in a bigger scale.

Keywords: Web Radio, Visual Learning Design, Educational Scenarios.

1 Introduction

The use of radio as an educational tool has already begun at the beginning of the previous century. In the United States, educational radio was used in both public schools and higher education institutions since the 1920s [1]. With the rise of the digital era, radio is no longer linear broadcasting, but also associated with metadata, synchronized slideshows and even short video clips [2]. Web radio has been used for enhancing and motivating learning in different subjects and at different educational levels. Levine and Franzel proposed a framework for using radio in the teaching of writing [3]. They argued that employing writing for radio in English high school classes contributes to student understanding of the relevance of school writing assignments. Moreover, they found that new technologies, such as smartphones and social media, make the introduction of radio at schools easier, since no school radio station, dedicated recording equipment, or specialized teacher skills are needed to use radio.

Apart from enhancing learning, web radio provides new possibilities for cooperation between students in the same class and between schools [4]. McGroathy identi-

fied benefits of planning and implementing cooperative learning activities in acquiring English as a second language by employing a radio show [5]. Similarly, Lemos Tello found that there is a positive correlation between the participation of students in an online radio show with the aim to foster speaking confidence, and the use of a cooperative learning strategy [6]. Piñero-Otero and Ramos investigated the potential of web radio for the sense of belonging creation and cohesion in higher education communities as perceived by students and professors at Aveiro University, Portugal [7]. They concluded that both students and professors believe that web radio can foster development of a sense of belonging, unity, and communication in the university community (a new channel of communication internal or external) by allowing participation in and dissemination of content production. Finally, Güney et al. investigated how the interactive services of an online children radio network (Radijojo) affect participation strategies and may nurture participation [8]. For this study, they adopted two analysis frameworks and collected qualitative data by analyzing web radio content analysis and conducting semi-structured interviews. Their results revealed that despite the lack of detailed interactive and participative tools, the model based on the development of collective content provided a potential for the inclusion of children in the communication.

In this paper, we present research carried out in the NEStOR (Networked European School Web Radio) project[1], which aims at developing the necessary tools and skills in order to successfully incorporate web-radio activities into educational settings. The project provides an online platform that will attract schools from all around Europe to produce radio productions with educational value. The process of implementing such productions may enable various literacies (such as media and information), and various skills (such as critical thinking, collaboration, creativity, etc.). The project has also developed a framework for supporting the educational aspects of the web radio (e.g. guides, learning scenarios and good practices), and uses the experience of the European School Radio (ESR) that operates successfully with more than 400 schools in Greece and Cyprus in the last 5 years. Our observations on activities and interactions on the web radio portal during these years confirm the literature presented above that claims that web radio may provide context for collaborative and social interaction and learning.

2 Learning Design

Web radio provides more opportunities regarding content transmission and collaboration for content production compared to traditional radio. However, educational activities taking place in web radio should be supported and justified by a pedagogical foundation, in order for them to have teaching and learning potential. In this project, we have chosen to follow a Learning Design (LD) approach for developing learning scenarios for web radio. LD is an approach to describe a learning and teaching process, which can be applied at different levels of educational practice, e.g. lesson,

[1] http://europeanschoolradio.eu/

course or even curriculum level [9]. Moreover, it may be motivated by different pedagogical theories and employ different (technological) tools and resources. Literature on this subject and this paper refers to LD both as a product and as a process [10].
In our project, we adopted a Visualized Learning Design (VLD) methodology, which facilitates the design process and the sharing of LDs [11]. The VLD procedure incorporates three levels of design: the macro level, the meso level, and the micro level. The macro level (Course Map View) is the level where teachers/designers discuss their initial ideas and get into a general discussion of their LD. The meso level (Learning Outcomes View) is the second stage of the VLD methodology where teachers/designers group and refer to their LD activities and explicitly set the learning outcomes and expected outputs. Lastly, the third stage of the VLD methodology, the micro level, is the more detailed level, which includes specific tools, resources, methodologies and roles for each activity [11]. In this project, we followed a simplified version of the VLD approach, where the macro and meso level are combined to one level. We expect that the VLD approach will help the project partners to guide and support the participating school teachers in the designing of learning scenarios that will lead to successful web radio broadcasts, and at the same time enhance communication between teachers and stimulate innovative pedagogical solutions while designing.

In the first year of the project, we applied the VLD approach for developing learning scenarios at the three pilot schools participating in the project[2]. The schools had to use three different templates to describe their learning scenario for a web radio broadcast, namely a macro level design template, a micro level design template and a learning scenario template. The participating schools consist of one lower secondary school in Cyprus, one upper secondary school in Greece, and one upper secondary school in Lithuania. The school in Cyprus designed a learning scenario on literature and adolescence, which was implemented in four teaching hours, the school in Greece a learning scenario on climate change, which was implemented in six teaching hours, and the school in Lithuania designed a learning scenario on Lithuanian tales of magic, which was implemented in two teaching hours. All the learning scenarios developed by the three partner schools were implemented as web radio productions during the period of May – June 2017. All the web radio productions were broadcasted on the ESR portal, since the NEStOR portal was under development during that period.

In this article, we present a survey study that aimed to evaluate the VLD approach for developing educational scenarios in web radio, and addressed the following research questions:

- What are the teachers' perceptions on the LD development?
- What are the teachers' perceptions on the class implementation of the LD with focus on the process?
- What are the teachers' perceptions on the final web radio product?

[2] https://www.e-epimorfosi.ac.cy/nestor/o4a1.pdf

3 Methods

As mentioned in the previous paragraph, teachers from the three school had to develop and implement a learning scenario for developing a web radio broadcast. All three schools had to follow the following procedure based on the VLD approach: 1) Investigate through their curriculum and their students' interests an area that could serve as a learning scenario for the project, 2) Share the macro level design of their scenario and discuss it with the project team, 3) Develop a detailed learning scenario , 4) Develop each activity of their learning scenario (optional), 5) Implement the learning scenario, 6) Evaluate the learning scenario and the web radio broadcast using the provided tools.

For the evaluation part, and in order to answer the aforementioned research questions, we designed an online survey study among the teachers of the three partner schools, who participated in the pilots of the first year of the project. The study employed an online questionnaire consisting of 5-point Likert scale with 25 items and 3 open-ended questions. The items of the Likert scale are covering three themes: the LD development, the class implementation, and the web radio output. The items on the LD development refer to the LD elements, process and support. The items on the class implementation refer to the LD aspects of implementation, its impact on students, as well as to the critical aspects of the implementation. The items on the web radio output refer to the content of the output, the audio quality as well as the students' learning outcomes (knowledge and skills). The questionnaire was distributed to the teachers via Survey Monkey and all eight participants from the three partner schools responded.

4 Results

The first part of the questionnaire consisted of twelve questions on the LD development (**Fig. 1**). Teachers' responses overall showed a positive stance towards the project and the VLD approach. Teachers' thought that the aims of the LD were related to the national curriculum, and were also related to web radio production. Moreover, teachers believed that the LD supported the development of students' transversal, and media and information literacy skills. It was overall indicated that the supporting material on LD and web radio production was satisfactory and seemed to be adjusted to teachers' and students' needs, and that the LDs included ways to assess the process of web radio production and the final outcome. Finally, almost all teachers (seven agreed, one neutral) agreed that they were provided with pedagogical support to develop LD.

In the open-ended questions, one teacher indicated also that: *"The most important was to develop the theme of the scenario, means to make it educational and close to the national curriculum. Therefore, it had to be interesting and attractive both for national and international audience."* This implies the teachers devoted time and effort to reach outcomes that would be both educational for the web radio producers and entertaining for the audience.

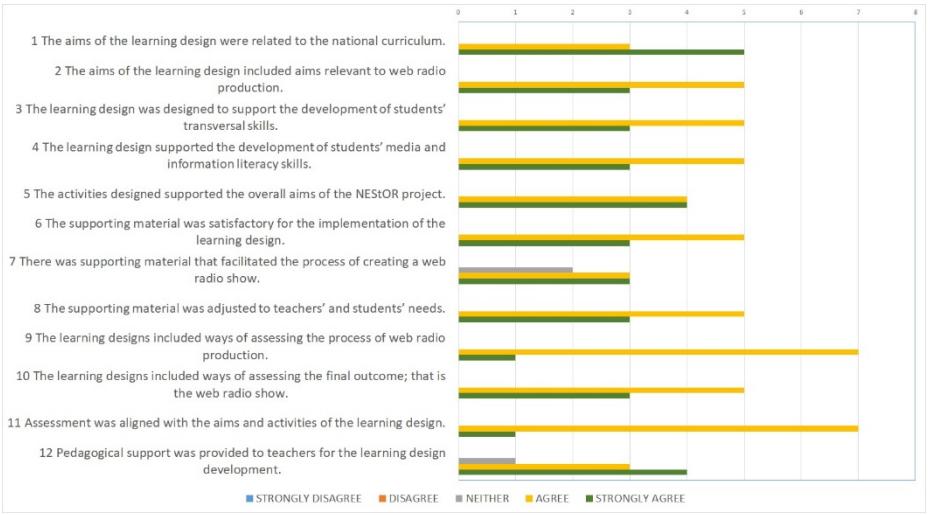

Fig. 1. Teachers' perceptions on learning design

The second part of the questionnaire consisted of nine questions on the class implementation of the LD (**Fig. 2**). Most of the participating teachers indicated that the implementation run smoothly, and that the students reacted positively on the implementation and seemed to have enjoyed this process. Specifically, teachers identified students' reactions as the most important aspect of the implementation for them. In the open-ended questions, one of the teachers suggested that through this implementation "…*students had the opportunity to express their thoughts and feelings.*" while another teacher discussed "…*the joy of making and the heartily participation of the students*". Another important statement made by a participating teacher was the following: *"The students were willing and eager to participate in the writing of dialogues and the recording of the radio show. After the radio show students agreed that the use of the web radio in the teaching process was innovative."* Moreover, all teachers agreed that students' transversal skills, and media and information literacy skills seem to have developed. Six teachers indicated that students did not seem to have faced major difficulties during the development of the web radio scenario, while the same amount of teachers stated that their students' digital skills were enough for the support of the web radio production. For the statement asking whether there was technology available to facilitate the production of the web radio show, there was six who agreed and one who strongly disagreed. Additionally, five teachers agreed that there was technological support for the production of the web radio show.

The last part of the questionnaire consisted of four questions on the final product of the LD, which was the web radio show (**Fig. 3**). All teachers agreed that the content of the web radio show was satisfactory in regards to the chosen curriculum unit, and that its audio quality was also satisfactory. Finally, teachers agreed that the web radio show demonstrated students' skills and reached the aims set in the LD. In the open-ended questions, one teacher mentioned that *"the most important was the conversion*

of the students[’] written speech into a radio speech and also the production and recording of the broadcast.”

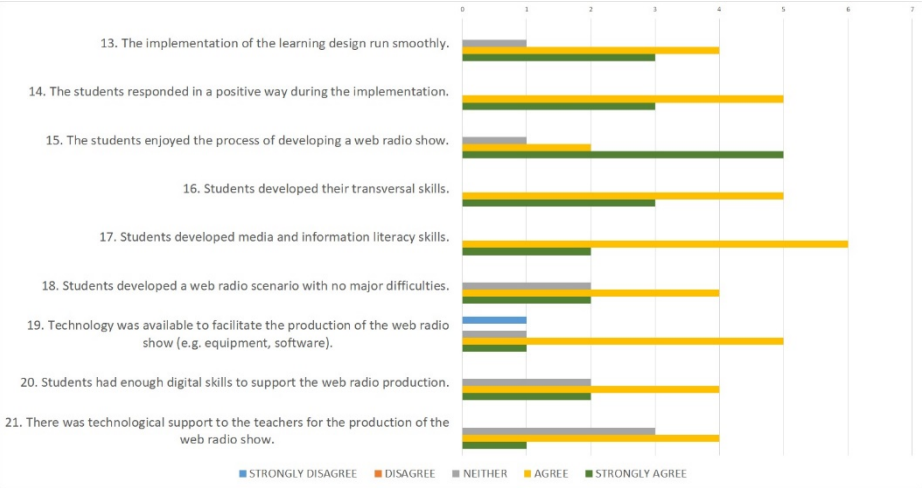

Fig. 2. Teachers’ perceptions on the implementation of NEStOR

Regarding the open-ended questions, some of the answers were discussed in the previous paragraphs to enhance the results of the close-ended questions. In the following, we will refer to the main themes mentioned by teachers when answering these questions. In the first question, where the teachers had to indicate the most important aspect of this implementation for them, the answers varied including the scenario, students’ reactions, the production and the cooperation. One teacher particularly said that the most important aspect was: *“That the students cooperated actively, worked critically and responsibly with creativity and imagination, and, finally, acquired knowledge with quality and duration, in a really attractive way. This kind of implementations help the school go beyond its conventional framework, with substantial learning outcomes.”*

The second open-ended question was related to the difficulties and challenges teachers faced during the implementation. Two teachers mentioned the time limitations involved, as it was a time consuming process and required teachers to devote time prior to the lesson to prepare, as well as during the lessons. This was often a challenge due to the time limitations of the curriculum. Moreover, there were also teachers who connected time limitations with the challenge to find participants at the beginning. Apart from difficulties with time limitations, there were a few comments on challenges and difficulties related to guiding and coordinating students. As this was a new process for both students and teachers, there were challenges involved into working this way and providing the necessary guidance and support. Finally, another challenge identified was the lack of necessary equipment.

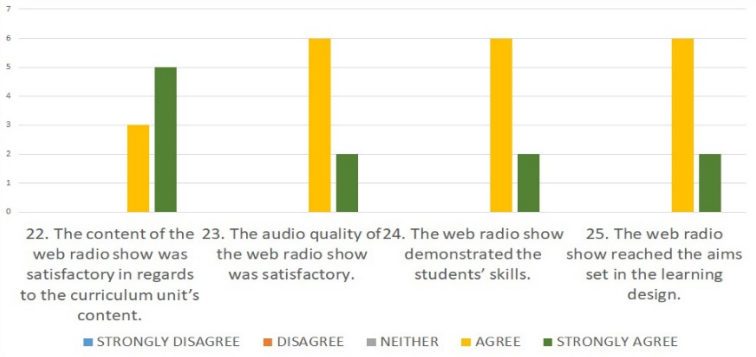

Fig. 3. Teachers' perceptions on the final product

In the third question, teachers had to indicate what they would do differently in a future implementation. Four suggested better planning in regards to when the implementation takes place in the school. Another time-related suggestion had to do with a shorter implementation. Furthermore, two teachers proposed alternative ways for the implementation. One suggested implementing the same scenario to another school for evaluating its impact in another class, while the other suggested that students in the same class could develop in groups several web radio shows covering different aspects of the selected curriculum unit.

5 Discussion and Conclusion

The results presented above indicate that the VLD approach helped teachers to think about the educational aspects of the web radio production to be developed. As mentioned before, teachers aligned the theme and the learning objectives with the curriculum and their students' interests. Moreover, the VLD approach helped teachers and the project team in their communication, since the teachers had a way to make concrete their initial ideas and the project team could provide more targeted feedback on these initial plans. The statement that had the most neutral answers was the one regarding the supporting material on web radio productions. Since teachers were provided with a guide covering all the technical aspects of this process, we assume that teachers felt they needed more support due to the lack of previous experience in this field.

As far as the class implementation of the LD is concerned, the teachers reported very positive experiences and perceptions, which are also reflected in their answers in the open-ended questions. Moreover, the teachers highlighted the possibilities and the impact such implementations could have for student learning and collaboration. Such possibilities include engaging students in learning scenarios aligned with their interests, providing them the space and time to develop their skills (digital, transversal, media and information literacy skills), collaborate in groups, and reach *'substantial learning outcomes'*. The aspect that seems to be weak in this part is again the technological support, and the provision of technology (software, equipment). Since the

schools were responsible for the latter, the only thing that could be improved in the project is to provide more clear guidelines on the necessary technology.

The teachers' answers regarding the final web radio product showed also positive results. The teachers reported that it was overall an interesting experience for both teachers and students, and reached their goals and expectations. The aspect that received the most positive response was the alignment of the web radio output to the curriculum unit. We believe that this is due to importance of this alignment for schools, which was also evident during the LD development phase.

It has to be noted here, that the aforementioned results come from a small study, therefore they are mainly indications. Taking into consideration the experiences and the evaluation results of the first year, we aim at employing the VLD approach in a bigger scale implementation during the second year of the project. In the coming evaluation, we will also investigate student perceptions on the approach (mainly on the implementation of the LD and the final output) since this is an aspect lacking in the current evaluation due to time limitations.

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